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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/813,856	03/22/2001	Masayuki Orihashi	P20798	3437
7055	7590	09/26/2005	EXAMINER	
GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191			DEPPE, BETSY LEE	
			ART UNIT	PAPER NUMBER
			2637	

DATE MAILED: 09/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/813,856

Applicant(s)

ORIHASHI ET AL.

Examiner

Betsy L. Deppe

Art Unit

2637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 7/13/05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,3 and 8-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,8-13 and 16-18 is/are rejected.
- 7) ☒ Claim(s) 9,14 and 15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments, see second paragraph on page 10, filed July 13, 2005, with respect to the rejection(s) of claim(s) 1, 3, 4 and 18-20 under 35 USC 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of X.
2. Applicant's arguments filed July 13, 2005 have been fully considered but they are not persuasive with regard to claims 8, 10-13, 16 and 17.
3. In response to the applicant's argument on page 11 (see second paragraph) that Henrion does not disclose a correcting signal that "is indicative of an inverse characteristic of the non-linear quantized signal," since the correcting signal (see "a<sub>i</sub>" in Figure 12A) corrects nonlinearities (see column 19, lines 44-50), it is inherent/implicit that the correcting signal corresponds to (thereby "indicating") the inverse characteristic of the non-linear quantized signal in order to adequately compensate for the non-linearity.
4. In response to applicant's argument on page 12, second paragraph that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's

disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

5. In response to applicant's argument in the paragraph on pages 12-13 that Tol does not disclose "a correcting signal that is indicative of an inverse characteristic of the non-linear quantized signal" as recited in claim 13, it is inherent/implicit that the compensation signal provided by the table 4 in Figure 1a corresponds to (thereby "indicating") the inverse characteristic of the non-linear quantized signal in order to adequately compensate for the non-linearity when added with the non-linear signal outputted by the A/D converter.

### ***Drawings***

6. The drawings were received on July 13, 2005. These drawings are accepted.

### ***Claim Rejections - 35 USC § 102***

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 8 and 13 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Henrion (US Patent No. 5,594,612 cited in the Office Action mailed April 13, 2005).

9. With regard to claim 13, Figure 12a of Henrion loses the claimed invention including a receiver comprising a non-linear quantizer (201) and distortion converter with a linear compensator (210 and 211) which determines a correcting signal (a'i)

which is used by the linear compensator to convert the non-linear quantized signal to a linear signal (217). (See also column 19, lines 27-50)

10. With regard to claim 8, Henrion discloses the claimed invention. It is inherent/implicit that a quantization characteristic of the quantizer is used to correct the distortion. Since the distortion results from the quantizer, the quantization characteristic of the quantizer must be used to accurately compensate for the distortion.

***Claim Rejections - 35 USC § 103***

11. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

12. Claims 1, 3 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baier et al. (US Patent No. 5,375,255 cited in the Office Action mailed May 13, 2004) in view of Koyama et al. (US Patent No. 6,771,719).

13. With regard to claim 1, Figures 2 and 3b of Baier et al. disclose the claimed invention including a receiver (2) with a quadrature demodulator (23) and a distortion corrector (30) wherein the distortion corrector comprises a distortion estimator (TABLE in Figure 3b) and plural distortion compensators (see the multipliers in Figure 3B) wherein the in-phase and quadrature signals are input to the distortion estimator and a respective distortion compensator. Figure 3b shows distortion estimator T generating a correcting signal that is utilized by the distortion compensators to remove the non-linear distortion. (See column 3, line 56 - column 4, line 44; column 5, lines 60-65; and

column 6, lines 30-38) Baier et al. also teaches that the correcting signal is indicative of the inverse characteristic of the processed received signal. (See column 4, lines 34-37) However, Baier et al. does not disclose an adjuster that adjusts an amplitude of the received signal.

Koyama et al. teaches using an IF AGC amplifier which adjusts that the amplitude of the received signal. (See 608 in Figure 13 and column 1, lines 33-35 and 53-58) It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the IF AGC amplifier of Koyama et al. in the circuit disclosed by Baier et al. in order to compensate for signal fluctuations to ensure that the received signal is sufficient for data recovery. For example, if amplitude or signal strength of the received signal is too low, the receiver will not be able to recover the transmitted data with amplification of the received signal.

14. With regard to claim 3, Baier et al. in view of Koyama et al. disclose the claimed invention including the receiver comprised of a filter calculator that limits a frequency band of the received signal (20 and 21). (See Baier et al., 20 and 21 in Figure 2 and column 4, lines 4-6)

15. With regard to claim 18, Baier et al. in view of Koyama et al. disclose the claimed invention including performing reception processing on an instantaneous signal. Since the analog receiving section (2) uses only the currently received signal, it is implicit that the received signal comprises an instantaneous signal.

16. Claims 8, 10, 11, 13, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tol et al. (US Patent No. 4,746,902 cited in the Office Action mailed April 13, 2005) in view of Baier et al.

17. With regards to claims 13 and 17, Figure 1a of Tol et al. discloses the claimed invention including a receiver comprising a non-linear quantizer (2 in Figure 1a) and a distortion converter (3, 4 and 5 in Figure 1a) that converts the non-linear quantized signal to a linear signal wherein the distortion converter comprises a linear compensator (3 and 4 in Figure 1a) that determines a correcting signal and the correcting signal is used by the linear compensator to convert the non-linear quantized signal to a linear signal. Furthermore, it is implicit that the received signal comprises an instantaneous signal. However, Tol et al. does not teach that the linear signal is for demodulation.

Since the circuit in Tol et al. compensates for the non-linear distortion in an A/D converter and Baier et al. teaches using an A/D converter in a demodulator (see Baier et al., column 1, lines 32-35), it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the circuit taught by Tol et al. in the digital processing section 30 of Baier et al. in order to provide good linearity at a comparatively low cost. (See Tol et al., col. 1. lines 41-44)

18. With regard to claim 8, Tol et al. in view of Baier et al. discloses the claimed invention including using a quantization characteristic of the quantizer. (See Tol et al., "3" in Figure 1a)

19. With regard to claim 10, Tol et al. in view of Baier et al. discloses the claimed invention including a calculator. (See Tol et al., "5" in Figure 1a)

20. With regard to claims 11 and 16, Tol et al. in view of Baier et al. discloses the claimed invention including converting the non-linear signal into a signal represented by a code related to at least one characteristic of the received signal. (See Tol et al., "3" in Figure 1a) Furthermore, it is inherent that 3, 4 and 5 in Tol et al. performs digital signal processing since the output of the quantizer (7) that is provided to "3" and "5" is a digital signal.

21. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tol et al. in view of Baier et al., as applied to claim 11 above, and further in view of Maru (US Patent No. 6,553,084 B1 cited in the Office Action mailed April 13, 2005). Tol et al. in view of Baier et al. disclose the claimed invention except for performing reception processing based on a control signal in a demodulated linear signal.

Maru discloses performing reception processing based on a control signal in a demodulated linear signal. (See Figure 1) It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teaching of Maru into the apparatus disclosed by Tol et al. in view of Baier et al. in order to ensure that the receiver is operating in the optimum range.

#### ***Allowable Subject Matter***

22. Claims 9 14 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.




***Conclusion***

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Betsy L. Deppe whose telephone number is (571) 272-3054. The examiner can normally be reached on Monday, Tuesday and Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272 - 2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Betsy L. Deppe  
Primary Examiner  
Art Unit 2637

Accepted  
BD 9/22/05

Application No. 09/813,856  
 Applicant: Masayuki ORIHASHI et al.  
 Title: DIGITAL RECEPTION APPARATUS  
 Responsive to Official Communication dated: APRIL 13, 2005  
 REPLACEMENT SHEET

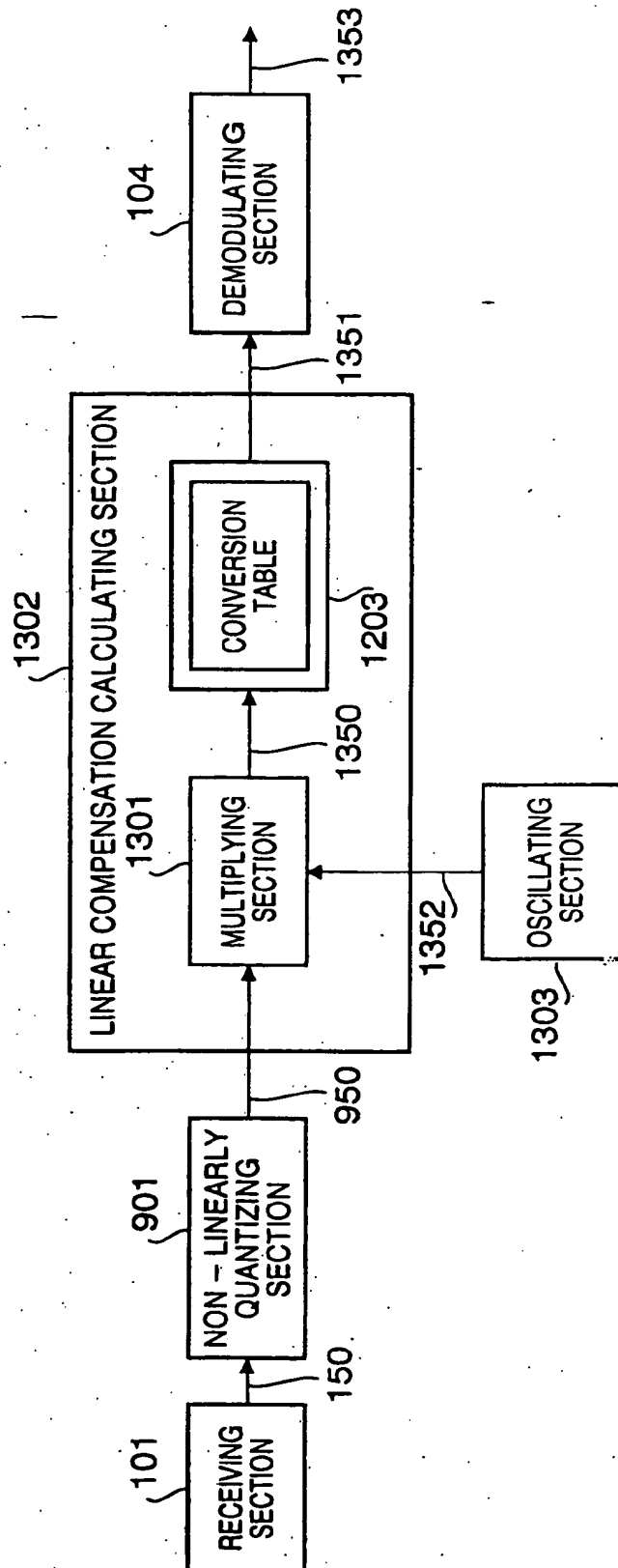


FIG. 13